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NCRAR Newsletter

National Center for Rehabilitative Auditory Research, Portland, OR

A VA RR&D Center of Excellence

Special points of interest:

- Noise Exposure While Skydiving
- Meet Bob Folmer, NCRAR Research Investigator
- 2012 Seminar Series
- 2012 Portland VA Research Day

Note from the Director: Patrick Feeney (continued on page 2)



It has been a busy quarter here at the NCRAR. In late January, we hosted the Department of Defense (DoD) Auditory Research Working Group (ARWG) annual meeting. This gathering gave us the opportunity to learn about priority research projects in hearing and balance from the various branches of the military who were in attendance. We were also able to highlight NCRAR research initiatives, especially in areas where there is overlapping interest, including hearing loss prevention and auditory and balance issues secondary to blast injury, which are current priorities within the VA.

Marjorie Leek provided an overview of NCRAR research for the attendees, followed by several investigators who presented on current NCRAR research studies. Robert Folmer presented on "A Computer-Based Hearing Loss Prevention Education Program for Veterans and Military Personnel." Erick Gallun presented on "Central Auditory Dysfunction" in relation to blast injury. Dawn Konrad-Martin's talk on "Novel Approaches for Identifying Ototoxicity" provided approaches to monitoring for ototoxicity that could also be applied to otoprotectants. Finally, Jim Henry provided an introduction to Progressive Tinnitus Management, which was developed at the NCRAR and recently accepted by VA Central Office as the approved method for tinnitus

management (featured in our January Newsletter).

At the ARWG meeting, we also learned about the focus of the new DoD Hearing Center of Excellence (HCE) from Interim Executive Director Mark Packer, M.D. The HCE was instrumental in planning this meeting, along with assistance from past NCRAR director, Steve Fausti—who is a long-time member of the DoD ARWG. We look forward to a long-term involvement with the DoD ARWG since many of the research interests of NCRAR investigators, vis-à-vis Veteran hearing and balance health, overlap with the interests of ARWG researchers. See Tina Penman's article on noise exposure while skydiving in this month's newsletter as an example of an activity related

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Noise Exposure Levels While Skydiving by Tina Penman, Au.D.

It's a bird... no, it's a plane.... no, it's a skydiver jumping out of a loud plane!

The United States Parachute Association (USPA) Skydiving Review reports 400,000 people took the plunge and went skydiving for the first time, contributing to over 3 million jumps in the United States in 2010. That estimate is even higher when taking into account the jumps of elite active duty service members, which

include tandem jumps, static -line jumps, High Altitude-Low Opening (HALO) jumps, and High Altitude-High Opening (HAHO) jumps for training, performances, and missions. An important, yet previously unexamined aspect of skydiving was the noise level that individuals are exposed to during a routine jump. With the significant number of jumps in both the military and civilian worlds, it is

important to understand the risks that are involved not only to the body, but also hearing.

Skydiving has three subjectively loud events: the plane ride, which is loud due to the aircraft engine; the freefall, which is louder due to wind noise; and the canopy ride to the ground, which is a continuation of the wind noise. The

Continued on page 4

Note from the Director (continued)

to the hearing health of our active service members and Veterans alike.

In addition to the ARWG meeting, many of our investigators were also busy this winter and early spring presenting papers at a variety of auditory meetings this year. Over 30 presentations were made!

We are currently preparing for an NCRAR strategic planning meeting, with

the assistance of the VHA National Center for Organization Development.

This process will help guide our progress over the course of the next 5 years, as we strive to achieve continued excellence in research that is focused on the auditory rehabilitation for Veterans now and in the future.

We also had several new awards or grants that were either funded or approved for funding since the last

newsletter. These are listed on page 9 of the newsletter.

We hope you enjoy this newsletter and extend an invitation to visit the NCRAR online at our web site: <http://www.ncrar.research.va.gov/>. Or even better, if your travels take you to the Pacific Northwest, come visit us in person!

NCRAR Seminar Series 2012

Monthly seminars presented by renowned scientists from around the world

All seminars take place 12-1 pm Pacific Time in PVAMC Building 101, Room 109. Most are also broadcast live via v-tel to other VA facilities and are available on DVD by request from Bonnie.Becker@va.gov

- May 11:** [Terry Takahashi, Ph.D.](#) Institute of Neuroscience, University of Oregon. Title: A Simpler Explanation of the Precedence Effect?
- June 22:** [Laura Driesbach, Ph.D.](#) San Diego State University, CA Title: Cochlear BASE-ics: Objectively Measuring Ultra-High Frequency Human Hearing
- July :** TBD
- August 10:** [Brian Fligor, Ph.D.](#) Children's Hospital, Boston/Harvard Medical School, MA.
- Sept. 21:** [Curtis Billings, Ph.D.](#) National Center for Rehabilitative Auditory Research, Portland OR.
- Oct. 19:** [Peter Jacobs Ph.D.](#) National Center for Rehabilitative Auditory Research, Portland OR.
- November 2:** [Nina Kraus, Ph.D.](#) School of Communication, Northwestern University.
- December 9:** [Margaret Wallhagen, Ph.D.](#) Department of Physiological Nursing, UCSF.

NCRAR Lending Library

Clinicians and researchers can now borrow DVDs of previous presentations, including presentations from previous NCRAR conferences. For a list of DVDs available, check out the website: http://www.ncrar.research.va.gov/Education/Clinician_Resources/Index.asp and contact ncrar@va.gov with the title of the DVD you would like to borrow.

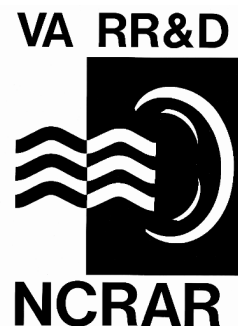
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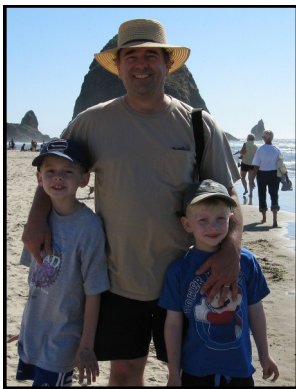
E-mail: ncrar@va.gov

<http://www.ncrar.research.va.gov/>



Meet Bob Folmer, Research Investigator

Let's start at the beginning (please indulge me on this): I was born at Saint Mary's Hospital in San Francisco during the summer in 1957. I couldn't have known it at the time, but the hospital's location is adjacent to several venues that would play major roles in my future. For example, the medical center is across the street from Golden Gate Park, an urban oasis where I've spent many happy days visiting Steinhart Aquarium, the Japanese Tea Garden, the Conservatory of Flowers, and De Young Museum. The Park is also where, during a 4th grade field trip, a seagull dropped a "bomb" onto the top of a female classmate's beehive hairdo, to the delight of unsympathetic schoolboys nearby. During those elementary school years and beyond, some Sunday afternoons were spent at Kezar Stadium – located 5 blocks from Saint Mary's – watching 49er football games with my dad, brother and uncle. A few years later, I was thrilled to play high school football games on the same field (which is also where Clint Eastwood shot the villain Scorpio in the movie "Dirty Harry") after the 49ers moved to Candlestick Park. Speaking of the "Stick," as S.F. natives call the park, the neighborhood where I grew up is close enough to it that boyhood friends and I walked there on summer afternoons and paid 50 cents to watch Giants baseball games from the bleachers. We ALWAYS brought our baseball gloves and we ALWAYS arrived at the park before batting practice began so we could catch balls that players hit into the stands. Sometimes, we would ask our heroes to sign the baseballs if we could catch their attention. Just so we're clear on this: Willie Mays is the greatest player the game has ever seen.



Fast forward to May 31, 1975 – high school graduation day at Saint Ignatius Church, practically next door to Saint Mary's Hospital. I spent subsequent years studying biology at San Francisco State University. What else would be my major after collecting, studying and cataloging every type of crawling or slimy little creature I could find during childhood? Sorry, Mom. By senior year in college, I had taken many biology courses, but I hadn't found a true direction or calling. Then I took a basic neuroscience course from Dr. John Williston and I've been trying to figure out how our brains work ever since. One day in class, John mentioned that he and colleague Don Jewett were the first scientists to describe something called the "auditory brainstem response" several years earlier. At the time, I didn't understand the importance of their discovery, but I do now. It seemed that I was destined to study brain functions via the auditory system, so I applied to the doctoral program at the University of

California, San Francisco in order to work with Drs. Michael Merzenich, Christoph Schreiner and other renowned researchers. The UCSF campus is just 2 blocks from Kezar Stadium, 7 blocks from Saint Mary's. Now you know something about me: geographically, I was not very adventurous because I completed everything from kindergarten through a Ph.D. within the city limits of San Francisco. In 1997, I moved to Portland to work in intraoperative neural monitoring and to serve as Chief of Clinical Services of the OHSU Tinnitus Clinic.

Since then, I met my lovely wife Krista and much of our time and energy is now spent raising our sons Eric (9) and Jack (7). I came to NCRAR in October 2007 to work on the JIF Hearing Loss Prevention Project. Dr. Fausti might ask me, what have I learned? I'm not sure about that yet, but I do have these hopes and wishes for Eric and Jack: that they have fun during their childhood and build fond memories; that they live their lives with passion; that they find someone as caring and kind as their Mom; that they improve our world by being here. Last thing – my hobbies (passions, really) are cliff diving in one of those flying-squirrel suits, and whist.



Noise Exposure Levels While Skydiving (continued)



(Above) NCRAR Research Audiologist, Tina Penman, before a jump.

loudness of wind noise can be likened to something even non-skydivers have experienced, such as driving a car at 60mph with the windows down. In contrast, a skydiver weighing approximately 180 pounds free-falls towards the earth at 120mph, twice the speed of a car on the highway. The elevated noise levels from both the wind and aircraft have the potential to result in noise-induced hearing problems. Tammy Hart, a USPA licensed skydiver states, "I suffer from severe tinnitus and have a severe hearing loss that I believe was caused from the roar of the airplanes and freefall noise." Since there are no published studies that corroborate the subjective accounts of high noise levels encountered during skydiving, NCRAR Research Audiologist Tina Penman, Au.D.^{1,2}, and a research team that included Michael Epstein, Ph.D.², and Terry Hoffman³ were inspired to collect objective recordings during a number of skydiving jumps. This was accomplished by attaching a Howard Leight QuietDose™ Personal Dosimeter to the same skydiver on 78 skydives. Dosimetry measurements began just prior to the plane ride and ended just after landing, with the recording microphone (coupled by Class 3 hearing protection) being placed in the ear canals to achieve the most accurate recording of noise levels near the skydiver's eardrums. These recordings were uploaded to a PC laptop and noise dose measurements were calculated by the research team.

Measurements from the 78 skydives collected during this study indicated a mean equivalent continuous noise level (L_{eq}) of 99.5 dBA- similar to the noise levels of a motorcycle or snowmobile. Measurements for 57 of the 78 skydives indicated noise levels exceeding 115 dBA- similar in

noise level to an ambulance siren. These measurements indicate the potential for hearing damage, even with the use of Class 3 hearing protection. Further, the potential for hearing damage increases when lower classes of hearing protection with less attenuation are used, hearing protection is improperly placed, or when no hearing protection is used at all.

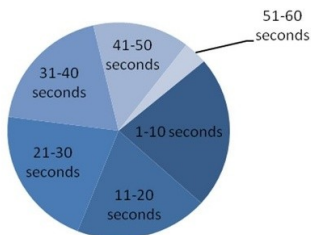
Terry Hoffmann practices what he preaches. "Everyone should have hearing protection, both in the plane and in freefall, which could include a hat/helmet that covers the ears, and/or vented earplugs." This applies to all skydivers, from those who jump several times a year to those who may jump just once in their lifetime. The next step for researchers is to identify hearing protection that provides the appropriate levels of attenuation. While noise from aircraft engines and wind should be reduced to safe levels, there is still a need for radio

signals and altimeter beeps to be audible. In addition, proper ventilation must also be considered as a freefall descent from high altitude causes negative middle ear changes.⁴



(Above) Skydiver with a personal dosimeter in place prior to a jump.

Duration of Skydiving Noise Levels Exceeding 115 dBA



(Above) Figure 1: 57 out of the 78 skydives exceeded a noise

Pictures and figure courtesy of Tina Penman

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² Auditory Modeling and Processing Laboratory (Boston, MA, 02115)

³ USPA Licensed Skydiver and Instructor at Skydive Oregon (Molalla, OR, 97038)

⁴ Gutovitz, S., Weber, K., Kaciuban, S., Colern, R., Papa, L., Giordana, P. (2008). Middle ear pressure and symptoms after skydiving. *Aviation Space Environmental Medicine*, 79(5), 533-6.

Don't Forget- May is Better Hearing and Speech Month!



In celebration of Better Hearing and Speech Month, the NCRAR and representatives from the Audiology Clinic will be hosting a table in the atrium of the Portland VA Medical Center at various times throughout the month. The goals of these events are to bring an awareness to the hearing-related issues experienced by the Veteran population, and to offer Veterans the opportunity to speak with hearing health care professionals. For more information on these events, contact Jay Vachhani at Jay.vachhani@va.gov

(Left) NCRAR Research Audiologist Dr. Jay Vachhani and Research Assistant ShienPei Silverman

NCRAR publications and presentations Jan 2012 to March 2012

Publications

- Bennett K, Billings CJ, Molis MR, Leek MR. Neural encoding of speech signals in informational masking. *Ear & Hearing*, 2012 March/April; 33(2): 231-8.
- Folmer RL. Implants Can Improve Tinnitus, But Most Offer No Quick Fixes. *Hearing Journal*, 2012; 65(3):42-48.
- Folmer RL, Saunders GH, Dann SL, Griest S, Porsov E, Fausti SA, Leek MR. A Computer-based Hearing Loss Prevention Education Program for Veterans and Military Personnel. *Journal of Rehabilitation Research and Development*, In press 2012.
- Folmer RL, Saunders GH. Preface to Special Issue of *Seminars in Hearing* – Proceedings of the 5th Biennial NCRAR Conference: Expanding our Horizons: Medical Conditions and Audiology. *Seminars in Hearing*. In press 2012.
- Folmer RL. rTMS for tinnitus. *Frontiers in Human Neuroscience* 2012; 6 (1).http://www.frontiersin.org/human_neuroscience/10.3389/fnhum.2012.00001/full
- Henry JA, Galvez G, Turbin MB, Thielman E, McMillan G, Istvan J. Pilot study to evaluate ecological momentary assessment of tinnitus. *Ear and Hearing*. 2012; 33(2):279-290.
- Jacobs PG, Konrad-Martin D, McMillan GP, McDermott D, Fausti S, Kagen D, Wan E. Influence of acute hyperglycemia on otoacoustic emissions and the medial olivocochlear reflex, 2012 Feb; 131(2);1296-1306.
- Konrad-Martin, Reavis, McMillan, Dille M. Multivariate DPOAE metrics for identifying changes in hearing: Perspectives from ototoxicity monitoring *International Journal of Audiology*. 2012; 51:S51-S62.
- Konrad-Martin D, Dille MF, McMillan G, Griest S, McDermott D, Fausti SA, Austin DF. Age-related changes in the auditory brainstem response. *Journal of the American Academy of Audiology*. 2012 Jan; 23(1):18-35.
- Meikle MB, Henry JA, Griest SE, Stewart BJ, Abrams HB, McArdle R, Myers PJ, Newman CW, Sandridge S, Turk DC, Folmer RL, Frederick EJ, House JW, Jacobson GP, Kinney SE, Martin WH, Nagler SM, Reich GE, Searchfield G, Sweetow R, Vernon JA. The Tinnitus Functional Index: A new clinical measure for chronic, intrusive tinnitus *Ear and Hearing*. 33(2), 2012, 153-176.
- Submitted**
- Berlow Y, Pollaro J, Krisky C, Snodgrass M, Kohout K, Lewis MS, Wilmington D, Hutter M, Casiana L, Lilly DJ, Fausti S, Folmer R, Bourdette D, Rooney W. MRI Correlates of Dichotic Listening Performance in Multiple Sclerosis. *Seminars in Hearing*, submitted Feb 2012.
- Folmer RL, Hutter MM, Lilly DJ, Shannon J, Casiana L, Wilmington D, Lewis MS, Billings CJ, Krisky C, Berlow Y, Pollaro J, Rooney W, Bourdette D. Electrophysiological measures of auditory processing in patients with multiple sclerosis. *Seminars in Hearing*, submitted Feb 2012.
- Gallun F, Diedesch A, Kubli L, Walden T, Folmer R. Sensory and Communicative Disorders in Blast-Related Injuries. Invited paper, *JRRD*, submitted March 6, 2012.
- Jacobs PG. Remote assessment of health in older and frail adults living independently through mobility assessment. IN: *Telehealthcare Computing and Engineering: Principles and Design*. Science Publishers. Editor: Fei Hu. Submitted February, 2012.
- Jacobs PG, Silaski G, Wilmington D, Gordon S, Ellingson RM, Helt W, Mcmillan G, Fausti S, Dille M. Development and evaluation of a portable telemedicine audiometer for high frequency monitoring of hearing loss from ototoxicity. *IEEE Biomedical Transactions*, March, 2012. (accepted for publication)
- Lewis S, Wilmington D, Hutter M, McMillan G, Casiana L, Fitzpatrick M, Lilly DJ, Bourdette D, Folmer R, Fausti SA. Preliminary Identification of Central Auditory Processing Screening Tests for Individuals

Recent publications and presentations (Jan 2012-March 2012) continued

- with Multiple Sclerosis, Seminars in Hearing, submitted March, 2012
- McMillan G, Hanson T, Saunders GH, Gallun F. A two-component circular regression model for repeated measures auditory localization data. *Journal of the Royal Statistical Society Series C*. submitted March, 2012.
- Saunders, GH; Forsline A. Comparison of two forms of single-session hearing-aid counseling. *International Journal of Audiology*, submitted 2/28/12.
- Pope DS, Kampel SD, Gallun FJ. Speech intelligibility and recall: Are hospitalized patients impaired by noise? *American Journal of Nursing*, submitted February 23, 2012.
- Wan EA, Paul AS, Jacobs PG. Tag-free RSSI based indoor localization, Presented at Institute on Navigation 2012 International Technical Meeting, Newport Beach, CA, Jan 30-Feb 1 2012, in press.
- Presentations**
- Bever, J., Diedesch, A.C., Lewis, M.S., Gallun, F.J. Assessing benefit of pitch differences for hearing aid users in complex listening environments. Poster presented at: AudiologyNOW! (AAA annual meeting); 2012 March 28; Boston, MA.
- Bever J, Diedesch AC, Lewis MS, Gallun FJ. Assessing binaural hearing aid perception and performance in complex listening environments. Poster presented at: American Auditory Society annual meeting; 2012 March 9; Scottsdale, AZ.
- Billings C, Penman T. Perception in noise: measures of brain and behavior. Podium presentation at: Joint Defense Veterans Audiology Conference; 2012 Mar 19-21; Dallas, TX.
- Blankenship S, Austin D, Dille M, McMillan G, Griest S, Konrad-Martin D. Longitudinal Changes in Hearing Among Veterans With Diabetes. Poster session presented at: American Auditory Society Meeting; 2012 March 9; Scottsdale, AZ
- Dilaj K, Cienkowski KM, Saunders GH, Thibodeau L, Montano J. Outcome Measures: Tests We Heard About, But Have Not Used. Learning Module presented at: AudiologyNOW! 2012 March 28-31; Boston MA.
- Dille M. Quick, easy and accurate tests for cisplatin ototoxicity. Podium Presentation at JDVAC, Dallas, TX 3-21-12.
- Ellis E, Penman T, Billings C. Listening in noise: measures of electrophysiology and behavior. Poster presented at: American Auditory Society Scientific and Technology Meeting; 2012 Mar 8-10; Scottsdale, AZ.
- Folmer RL. A Computer-based Hearing Loss Prevention Education Program for Veterans and Military Personnel. DoD/VA Auditory Research Working Group (ARWG) Annual Meeting, Portland, OR, January 23, 2012.
- Folmer RL. Preserved Feedforward But Impaired Top-Down Processes in the Vegetative State. NCRAR EP Journal Club, Portland, OR, January 11, 2012.
- Folmer RL, Griest SE, Saunders GH, Dann SM, Porsov E, Fausti SA, Leek MR. Data from a computer-based hearing loss prevention education program for Veterans and Military Personnel. Poster Presentation at: National Hearing Conservation Association Annual Conference. New Orleans February 23-25, 2012.
- Gallun, F.J. The Auditory System. Guest Lecture, Portland State University. Portland, OR. February 17th, 2012.
- Gallun FJ, Hoover E, Sabin A, Souza P. Acoustical analyses of high-frequency modulation in vocoded speech. Poster presented at: American Auditory Society annual meeting; 2012 March 9; Scottsdale, AZ.
- Gallun, F.J., Konrad-Martin, D.L., Molis, M.R., Dann, S., Kampe, S.D., Vachhani, J.J. Relationships among aging and temporal sensitivity at multiple time scales. Poster presented at Association for Research in Otolaryngology, 35th Annual Midwinter Meeting. San Diego, CA February 25th -29th, 2012.
- Henry JA. "Tinnitus Research at the NCRAR." Meeting of the Department of Defense/Veterans Affairs Auditory Research Working Group. Portland, Oregon, January 23, 2012. (invited presentation)

National VA Research Week: April 23-27, 2012



(Left) Dr. Curtis Billings presenting at 2012 Research Day.
(Above) NCRAR Director Dr. Patrick Feeney, with Research Audiologists Drs. Angie Garinis and Dan Putterman, following the presentations.

Staff members and supporters of the Portland VA Medical Center (PVAMC) Research Department filled the hospital auditorium on April 27, 2012, in celebration of National VA Research Week. This event, hosted by the Portland VA Research Service, included presentations by a number of its researchers. NCRAR research investigator, Dr. Curtis Billings gave a presentation entitled "Finding Solutions to Hearing Difficulties Using Measures of Brain and Behavior," where he described behavioral and electrophysiological findings with speech-in-noise testing. Members of the PVAMC administration and research department praised researchers for their hard work and intellectual curiosity, which contribute to the success of their research program.

2011 Portland VA Research Facts

158 Research Investigators
479 Research Studies
~2100 Veterans volunteering in studies
263 Research publications
\$34.8M Total research funding



(Above) NCRAR Audiology Extern Melissa Papesh, Research Assistant Luke Baltzell, and Research Audiologist Dr. Tina Penman at the 2012 Research Day.



(Above) NCRAR Audiology Research Audiologists Drs. Jay Vachhani and Serena Dann at the 2012 Research Day.

Recent publications and presentations (Jan 2012-March 2012) continued

- Henry JA, Zaugg TL. "Progressive Tinnitus Management: Workshop for Audiologists." Puerto Rico Association of Audiologists Annual Convention. San Juan, Puerto Rico, February 3-4, 2012
- Jacobs, P.G., Wan, E.A., Gallun, F.J., McDermott, D., Konrad-Martin, D. Attention and the effect of active listening on the medial olivocochlear reflex. Poster Presentation Association for Research in Otolaryngology, 35th Annual Midwinter Meeting San Diego, CA February 25th -29th, 2012.
- Kampel SD, McMillan GP, Molis MR, Gallun FJ, Dann SM, Ellingson RM, Vachhani J, Konrad-Martin DM. Developing a Time-Gated Word Test Using Speech-Perception-in-Noise (SPIN) Sentences. Poster presented at: American Auditory Society Meeting; 2012 Mar 8-10; Scottsdale, AZ.
- Konrad-Martin D. Novel approaches for ototoxicity monitoring. Podium presentation given at the Department of Defense Auditory Research Working Group (DoD AWRG), January 2012, Portland, OR.
- Konrad-Martin, D., Jacobs, P.G., McMillan, G., Reavis, K.M., Dille, M.F. Usefulness of Source Knowledge for Detecting Ototoxicity Using DPOAEs, Invited Podium Presentation at ARO 2012 Midwinter Meeting. February 2012. San Diego, CA.
- Lewis MS, Fabry D. From bench to bedside: clinician-research cross-talk. Featured session presented at: AudiologyNOW! 2012 March 30; Boston, MA.
- Papesh MA, Billings C. Enhancement of cortical processing in low-noise backgrounds. Poster presented at: American Auditory Society Scientific and Technology Meeting; 2012 Mar 8-10; Scottsdale, AZ.
- Penman T, Epstein M, Poster Presentation: Skydiving Noise Levels. Poster Presentation at: National Hearing Conservation Association Conference, New Orleans, LA 2/23/2012.
- Reavis, K.M., McMillan, G.P., Konrad-Martin, D., Jacobs, P.G., Dille, M. Dose-related effect of cisplatin on distortion product otoacoustic emissions in Veterans. Podium Presentation at ARO 2012 Midwinter Meeting. 2/2012.
- Saunders GH, Cienkowski KM, Montano J, Preminger J, Sweetow R. Grand Rounds in Audiologic Rehabilitation. Featured Session presented at: AudiologyNOW! 2012 March 28-31; Boston, MA.
- Saunders GH, Feeney MP. (2012). NCRAR Research: From the laboratory to the clinic. Featured Session presented at: AudiologyNOW! 2012 March 28-31; Boston.
- Schmidt CJ, Henry JA, Myers PJ, Zaugg TL, Boris-Karpel S. "Similarities Between Chronic Pain Management and Progressive Tinnitus Management (PTM)" Presentation for the HSR&D Pain Cyberseminar Program: Spotlight on Pain Management, Online and telephone. February 7, 2012.
- Shearer DE, Leek MR, Molis MR, Bennett KO, Belding HM (2012). Auditory stream segregation of iterated rippled noises. Poster session presented at: American Auditory Society; 2012 March 9; Scottsdale, AZ.
- Teahen M, Saunders G, Silverman S. Auditory Training and Veterans. Podium presentation at: Joint Defense Veterans Audiology Conference; 2012 March 21; Dallas, TX.
- Turbin M, Tyson S. Effective Travel Aids for Persons with Combined Vision and Hearing Loss. Podium presentation at: 27th Annual California State University at Northridge International Conference on Technology and Persons with Disabilities. 2012 March 1; San Diego, CA.
- Wilbanks E, Folmer RL, Theodoroff SM. Transcranial Magnetic Stimulation for Relief of Chronic Tinnitus. Poster session presented at: American Auditory Society Annual Meeting, 2012 March 8; Scottsdale, AZ.

NCRAR Grants Funded January 2012-March 2012

Feeney MP (PI), Saunders GH (Co-PI). National Center for Rehabilitative Auditory Research. VA RR&D.

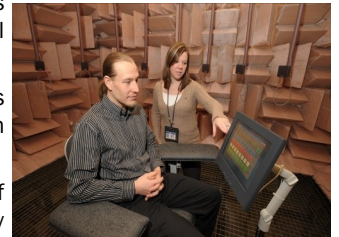
Folmer, RH (PI). Assessment of Auditory Function in Patients with Parkinson Disease VA RR&D.

Gallun, FJ (PI), Leek, MR (Co-I). Predicting the benefits of spatial and spectrotemporal cues. NIH/NIDCD.

Watson (PI), Leek, M (Subaward PI). Multi-Site Study of the Efficacy of Speech Perception Training for Hearing-Aid Users. NIH-NIDCD, R21/R33.

Ongoing NCRAR Research Studies

- A Hearing Loss Prevention Program for Veterans
- A portable audiometric monitoring device (the OtoID)
- Application of the health belief model to hearing healthcare
- Auditory Rehabilitation from the Perspective of the Significant Other
- Central auditory processing disorders associated with blast exposure
- Clinical applications for time-compressed speech tests
- Clinical trial of transcranial magnetic stimulation for relief of tinnitus
- Community-based kiosks for hearing screening and education
- Determinants of Word Recognition Speed in Older Listeners
- Effects of aging and hearing loss during rapid sound processing
- Effects of Training on Central Auditory Function in Multiple Sclerosis
- Electrophysiology and perception of speech in noise
- Evaluation of approaches to auditory rehabilitation for mild traumatic brain injury
- Expanding Our Horizons: Medical Conditions and Audiology
- Frequency tuning and word recognition speed in older adults
- Hearing loss and the perception of complex sounds
- Improving vowel perception by hearing-impaired listeners
- Individualized Objective Techniques for Early Detection of Ototoxicity
- Integrating auditory and visual information to improve hearing aids
- Joint DoD-VA Hearing Loss Prevention Program
- Longitudinal Changes in Auditory Function Among Veterans with Diabetes
- Mechanisms of imbalance and falls in Multiple Sclerosis
- Modeling auditory integration in people with impaired hearing
- Multi-site Evaluation of Progressive Tinnitus Management
- Multi-site Study of the Efficacy of Speech Perception Training for Hearing-Aid Users
- Neural Encoding of Signals in Noise: Effects of Hearing Impairment and Age
- Predicting the Benefits of Spatial and Spectrotemporal Cues
- Prevention of cisplatin ototoxicity with the antioxidant α -lipoic acid
- Self-Management Groups for Veterans with Dual Sensory Loss
- Telephone Tinnitus Education for Patients with TBI
- Temporal resolution of cochlear and auditory nerve responses in older adults
- The ability to make multiple auditory judgments about non-speech stimuli
- The effects of aging and hearing loss during rapid sound processing
- Wideband clinical diagnosis and monitoring of middle ear and cochlear function.



In Other News...

- Congratulations to NCRAR Software Engineer **Roger Ellingson** on being promoted to IEEE Senior member status.
- Congratulations to NCRAR Research Audiologist **Tina Penman** on being elected Treasurer for the Association of VA Audiologists.
- Welcome NCRAR Research Audiologists **Dan Putterman** and **Angie Garinis**.